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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/796,860  | 03/09/2004  | Chung P. Park        | 44306B              | 2431             |
| 109   | 7590        | 11/12/2004           | EXAMINER            |                  |
| THE DOW CHEMICAL COMPANY<br>INTELLECTUAL PROPERTY SECTION<br>P. O. BOX 1967<br>MIDLAND, MI 48641-1967 |             |                      | ZEMEL, IRINA SOPHIA |                  |
|   |             | ART UNIT             | PAPER NUMBER        |                  |
|   |             | 1711                 |                     |                  |

DATE MAILED: 11/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                            |                  |  |
|------------------------------|----------------------------|------------------|--|
| <b>Office Action Summary</b> | Application No.            | Applicant(s)     |  |
|                              | 10/796,860                 | PARK, CHUNG P.   |  |
|                              | Examiner<br>Irina S. Zemel | Art Unit<br>1711 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 09 March 2004.

2a) This action is **FINAL**.                            2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-20 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3-9-04.

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-6, 13, 14 and 20 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for cellular thermoplastic polymer foams prepared from ethylenic polymers, does not reasonably provide enablement for all possible thermoplastic polymer foams prepared from any other polymers, such as silicone rubber based polymers, polyamide based polymers, cellulose acetate based polymers, urethane based polymers, etc.. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. The specification provides enablement for producing foams with the claimed cell diameter (as per claim 11) and claimed cell diameter and open cell content (as per claim 2) for the foams obtained from ethylenic, and more specifically, ethylene-based polymers and some interpolymers of ethylenic polymers with aromatic polymers. However, nowhere in the specification other polymers that can be made into foams are mentioned. It would clearly require undue experimentation to determine which ones of all possible foamable thermoplastic polymers can be foamed to produce the foams with claimed characteristics, and how those foams (i.e., foaming conditions) can be obtained.

### ***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, and 5-12 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent 6,251,319 to Tusim et al., (hereinafter ("Tusim").

Tusin discloses cellular thermoplastic polymer foams prepared from polypropylene, or olefinic polymer as per claims 6-8. See illustrative examples and disclosure in column 3 line 11- column 4, line 26. The average cell diameter of the foams disclosed in the reference are explicitly defined in column 2, lines 30-34, which includes diameters such as 5mm, that meets the limitation of claim 1. The reference further expressly teaches that the thermoplastic polymers, i.e., polypropylene, may be blended with other olefinic polymers, such as low or high density polyethylene, polyethylene copolymers and mixtures thereof, thus meeting limitations of claims 9-12. See, for example, column 4, lines 27-37. Adding of fire retardants as per claim 5 is disclosed in column 5, line 24.

Therefore, the invention as claimed in claims 1, and 5-12 is fully anticipated by the disclosure of the Tusim reference (which is fully supported by the disclosures of the underlying provisional applications.)

Claims 1, and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by JP10-130416 to Kanebuchi Kagaku Kogyo KK (hereinafter "Kanebuchi").

Kanebushi disclosed polypropylene based foams with the average cell diameter of up to 5 mm. See abstract. And [0006], thus fully anticipating claims 1, and 6-8.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,132,171 to Yoshizawa et al., (hereinafter "Yoshizawa").

Yoshizawa discloses crosslinked polyethylene based foam with 100% cells opened by mechanical means. See illustrative Example 1, (A) Production of flame-retardant open cell crosslinked polyolefin foam in column 9, line 57 to column 6, line 23 and general disclosure in columns 4-7. Among suitable polyolefins, polypropylene is explicitly listed in column 6, lines 3-12. Flame retardant is added to the foam as per disclosure part (B) of illustrative example 1. See also Abstract, for example. In the illustrative example 1 (A) the average cell size of the foam is about 2 mm, which is a relatively large cell size for a polyolefin foamed product.. This example alone makes the claimed size of greater than 2 mm obvious (about 2mm includes cell sized slightly above or below 2mm). The reference does not specifically address, other than in illustrative examples, the average size of the suitable foams, thus implying that foams with any large size pores are suitable for the invention with reasonable expectation of

adequate results. Therefore, foams with average particle size of grater than 2 as claimed in claims 3 and 4 would have been obvious fom the disclosure of the reference with reasonable expectation of adequate results absebt showing of unexpected results.

The invention as claimed in claims1-8 and 20, therefore, would have been obvious from the disclosure of Yoshizawa reference at the time the invention was made.

Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tisum in combination with Encyclopedia of Polymer Science and Engineering, Cellular materials (hereinafter "Encyclopedia").

The disclosures of Tisum references are discussed above. The references do not explicitly teach polyolefin foams of their inventions being in a coalesced strand form. However, it is well known in the art that in order to obtain foam planks of large cross-section, polypropylene foams are extrude through dies that creates foams consisting of plurality of coalesced strands. This fact is supported by the disclosure of Encyclopedia. See especially 6.4.2. Therefore, it would have been obvious to process the foams disclosed by either Tisum through dies that creates foams consisting of plurality of coalesced strands in order to obtain large plank if such large structures are Desirable for a particular application. (Applicants should not that although the date when the attached Encyclopedia article became available online is later than the filing date of the instant application, the information disclosed in the article (extrusion of PP foams in the form of coalesced strands) was know to in art and published in hard copy version of Encyclopedia well before that date.)

***Allowable Subject Matter***

Claims 15 and 16 are allowable over prior art of record as the prior art does not disclose foamable polyolefin products with the cells that are elongated and the orientation of cell elongation is in the extrusion direction.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irina S. Zemel whose telephone number is (571)272-0577. The examiner can normally be reached on Monday-Friday 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571)272-1078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Irina. Zemel*  
Irina S. Zemel  
Examiner  
Art Unit 1711

ISZ